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TITLE	Reader School of Technology and Computer Science Tata Institute of Fundamental Research, Mumbai	April 2022 - Present
EDUCATION	<ul style="list-style-type: none">• DOCTOR OF PHILOSOPHY Laboratory for Information and Decision Systems (LIDS) Massachusetts Institute of Technology Cambridge, MA, USA• MASTER OF TELECOMMUNICATION ENGINEERING Dept. of Electrical Communication Engineering (ECE) Indian Institute of Science Bangalore, India• BACHELOR OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING Dept. of Electronics and Telecommunication Engineering (ETCE) Jadavpur University Kolkata, India	September 2012 - June 2017 August 2010 - August 2012 August 2006 - July 2010
WORK EXPERIENCE	<ul style="list-style-type: none">• Tata Institute of Fundamental Research, Mumbai Reader, School of Technology and Computer Science• Indian Institute of Technology Madras Assistant Professor, Dept. of Electrical Engineering• Qualcomm Research, San Diego, CA Senior Engineer, Wireless R&D• Nokia Bell Labs, Murray Hill, NJ Summer Intern, Fixed Networks and the Mathematics of Networks• Microsoft, Redmond, WA Summer Intern, Microsoft Azure and Microsoft Research	Apr 2022 - present Nov 2018 - March 2022 Oct 2017 - Oct 2018 June 2016 - August 2016 June 2014 - August 2014
RESEARCH INTERESTS	<ul style="list-style-type: none">• LEARNING, OPTIMIZATION, AND DECISION THEORY: Online learning, Caching algorithms.• NETWORKING AND COMMUNICATION: Age-of-Information, Queueing Theory, Network Control, Information Theory.	

Publications

Preprints

1. **A. Sinha** and R. Vaze, PLAYING IN THE DARK: NO-REGRET LEARNING WITH ADVERSARIAL CONSTRAINTS, **arXiv preprint 2310.18955**.
2. S. Chaudhary and **A. Sinha**, α -FAIR CONTEXTUAL BANDITS, **arXiv preprint 2310.14164**.
3. **A. Sinha**, BANDITQ - FAIR MULTI-ARMED BANDITS WITH GUARANTEED REWARDS PER ARM, **arXiv preprint 2304.05219**.
4. S. Sahoo, S. Chaudhary, S. Mukhopadhyay, and **A. Sinha**, ONLINE SUBSET SELECTION USING α -CORE WITH NO AUGMENTED REGRET, **arXiv preprint 2209.14222**.

Journal Papers

1. S. Akhtar, Krishnakumar G, Vishnu B, and **A. Sinha**, FAST AND SECURE ROUTING ALGORITHMS FOR QUANTUM KEY DISTRIBUTION NETWORKS, accepted for publication in **IEEE/ACM Transactions on Networking**.
2. **A. Sinha** and R. Bhattacharjee, OPTIMIZING THE AGE-OF-INFORMATION FOR MOBILE USERS IN ADVERSARIAL AND STOCHASTIC ENVIRONMENTS, **IEEE Transactions on Information Theory**, Vol 68, Issue 10, 2022.
3. J. Zhang, **A. Sinha**, J. Llorca, A. Tulino, E. Modiano, "OPTIMAL CONTROL OF DISTRIBUTED COMPUTING NETWORKS WITH MIXED-CAST TRAFFIC FLOWS", **IEEE/ACM Transactions on Networking**, Vol 29, Issue 4, 2021.
4. R. Bhattacharjee, S. Banerjee, **A. Sinha**, FUNDAMENTAL LIMITS ON THE REGRET OF ONLINE NETWORK-CACHING, **Proceedings of the ACM on Measurement and Analysis of Computing Systems (POMACS)**, Vol. 4, No. 2, Article 25. Publication date: June 2020.
5. **A. Sinha**, E. Modiano, "THROUGHPUT-OPTIMAL BROADCAST IN WIRELESS NETWORKS WITH POINT-TO-MULTIPOINT TRANSMISSIONS", **IEEE Transactions on Mobile Computing**, September 2019.
6. I. Kadota, **A. Sinha**, E. Modiano, "SCHEDULING ALGORITHMS FOR OPTIMIZING AGE OF INFORMATION IN WIRELESS NETWORKS WITH THROUGHPUT CONSTRAINTS", **IEEE/ACM Transactions on Networking**, May 2019.
7. I. Kadota, **A. Sinha**, E. Uysal-Biyikoglu, R. Singh, E. Modiano, "SCHEDULING POLICIES FOR MINIMIZING AGE OF INFORMATION IN BROADCAST WIRELESS NETWORKS", **IEEE/ACM Transactions on Networking**, September 2018.
8. **A. Sinha**, L. Tassiulas, E. Modiano, "THROUGHPUT-OPTIMAL BROADCAST IN WIRELESS NETWORKS WITH DYNAMIC TOPOLOGY", **IEEE Transactions on Mobile Computing**.
9. **A. Sinha**, E. Modiano, "OPTIMAL CONTROL FOR GENERALIZED NETWORK FLOW PROBLEMS", **IEEE/ACM Transactions on Networking**, pp 1-14, issue 99, Dec 2017.
10. **A. Sinha**, G. Paschos, E. Modiano, "THROUGHPUT-OPTIMAL MULTI-HOP BROADCAST ALGORITHMS", **IEEE/ACM Transactions on Networking**, 25.5 (2017): 3088-3101.
11. **A. Sinha**, P. Mani, J. Liu, A. Flavel, D. Maltz, "DISTRIBUTED LOAD MANAGEMENT ALGORITHMS IN ANYCAST-BASED CDNs", **Computer Networks, Elsevier**, 2017.
12. **A. Sinha**, G. Paschos, C.P. Li, E. Modiano, "THROUGHPUT-OPTIMAL MULTIHOP BROADCAST ON DIRECTED ACYCLIC WIRELESS NETWORKS", in **IEEE/ACM Transactions on Networking**, no. 99, pp. 1-15, 2017.
13. A. Chattopadhyay, **A. Sinha**, M. Coupechoux, A. Kumar, "DEPLOY-AS-YOU-GO WIRELESS RELAY PLACEMENT: AN OPTIMAL SEQUENTIAL DECISION APPROACH USING THE MULTI-RELAY CHANNEL MODEL", **IEEE Transactions On Mobile Computing**, 2017.

14. **A. Sinha**, A. Chattopadhyay, K.P. Naveen, P. Mondal, M. Coupechoux, A. Kumar, "OPTIMAL SEQUENTIAL WIRELESS RELAY PLACEMENT ON A RANDOM LATTICE PATH", **Ad Hoc Networks**, Elsevier, vol. 21, pp. 1-17, 2014.
15. **A. Sinha**, S. Das, B.K. Panigrahi, "A LINEAR STATE-SPACE ANALYSIS OF THE MIGRATION MODEL IN AN ISLAND BIOGEOGRAPHY SYSTEM", **IEEE Transactions on Systems, Man and Cybernetics Part-A**, vol. 41, no. 2, pp. 331-337, 2011.

Refereed Conference Papers

1. **A. Sinha**, A. Joshi, R. Bhattacharjee, C. Musco, M. Hajiesmaili, NO-REGRET ALGORITHMS FOR FAIR RESOURCE ALLOCATION, **NeurIPS 2023**, New Orleans, USA.
2. N. Mhaisen, **A. Sinha**, G. Paschos, and G. Iosifidis, OPTIMISTIC NO-REGRET ALGORITHMS FOR DISCRETE CACHING, Proceedings of ACM **SIGMETRICS 2023**, Orlando, Florida, USA.
3. A. Joshi and **A. Sinha**, UNIVERSAL CACHING, Information Theory Workshop (**ITW 2022**), Mumbai, India.
4. S. Mukhopadhyay, S. Sahoo, **A. Sinha**, k -EXPERTS - ONLINE POLICIES AND FUNDAMENTAL LIMITS, International Conference on Artificial Intelligence and Statistics **AISTATS 2022**
5. D. Paria, **A. Sinha**, LEADCACHE: REGRET-OPTIMAL CACHING IN NETWORKS, Advanced in Neural Information Processing Systems **NeurIPS 2021**
6. Vishnu B, **A. Sinha**, FAST AND SECURE ROUTING ALGORITHMS FOR QUANTUM KEY DISTRIBUTION NETWORKS, International Conference on Communication Systems and Networks **COMSNETS 2022**, Bangalore, India.
7. A. Mandal, R. Bhattacharjee, **A. Sinha**, OPTIMIZING AGE-OF-INFORMATION IN ADVERSARIAL ENVIRONMENTS WITH CHANNEL STATE INFORMATION, **COMSNETS 2022**, Bangalore, India.
8. **S. Mukhopadhyay**, **A. Sinha**, ONLINE CACHING WITH OPTIMAL SWITCHING REGRET, International Symposium on Information Theory (**ISIT 2021**), Melbourne, Australia.
9. R. Bhattacharjee and **A. Sinha**, COMPETITIVE ALGORITHMS FOR MINIMIZING THE MAXIMUM AGE-OF-INFORMATION, Mathematical performance Modeling and Analysis Workshop (**MAMA 2020**), Boston, MA, USA (held in conjunction with SIGMETRICS 2020).
10. R. Bhattacharjee, S. Banerjee, **A. Sinha**, FUNDAMENTAL LIMITS ON THE REGRET OF ONLINE NETWORK-CACHING, Proceedings of ACM **SIGMETRICS 2020**, Boston, MA, USA.
11. S. Banerjee, R. Bhattacharjee, **A. Sinha**, FUNDAMENTAL LIMITS OF AGE-OF-INFORMATION IN STATIONARY AND NON-STATIONARY ENVIRONMENTS, Proceedings of IEEE International Symposium on Information Theory (**ISIT**) 2020, LA, USA.
12. A. Srivastava, **A. Sinha**, K. Jagannathan, ON MINIMIZING THE MAXIMUM AGE-OF-INFORMATION FOR WIRELESS ERASURE CHANNELS, Proceedings of **RAWNET 2019**, Avignon, France.
13. **A. Sinha**, M. Andrews, P. Ananth, SCHEDULING ALGORITHMS FOR 5G NETWORKS WITH MID-HAUL CAPACITY CONSTRAINTS, Proceedings of **WiOpt 2019**, Avignon, France.
14. **A. Sinha**, E. Modiano, NETWORK UTILITY MAXIMIZATION WITH HETEROGENEOUS TRAFFIC FLOWS, Proceedings of **WiOpt 2018**, Shanghai, China.
15. I. Kadota, **A. Sinha**, E. Modiano, "OPTIMIZING AGE OF INFORMATION IN WIRELESS NETWORKS WITH THROUGHPUT CONSTRAINTS", Proceedings of IEEE **INFOCOM 2018**, Honolulu, HI, USA (**Best Paper Award**).
16. J. Zhang, **A. Sinha**, J. Llorca, A. Tulino, E. Modiano, "OPTIMAL CONTROL OF DISTRIBUTED COMPUTING NETWORKS WITH MIXED-CAST TRAFFIC FLOWS", Proceedings of IEEE **INFOCOM 2018**, Honolulu, HI, USA.

17. **A. Sinha**, E. Modiano, “THROUGHPUT-OPTIMAL BROADCAST IN WIRELESS NETWORKS WITH POINT-TO-MULTIPOINT TRANSMISSIONS”, *Proceedings of the 18th ACM International Symposium on Mobile Ad Hoc Networking and Computing, (MobiHoc) 2017*, Chennai, India.
18. **A. Sinha**, E. Modiano, “OPTIMAL CONTROL FOR GENERALIZED NETWORK-FLOW PROBLEMS”, *Proceedings of IEEE INFOCOM 2017*, Atlanta, GA.
19. **A. Sinha**, L. Tassiulas, E. Modiano, “THROUGHPUT-OPTIMAL BROADCAST IN WIRELESS NETWORKS WITH DYNAMIC TOPOLOGY”, *Proceedings of the 17th ACM International Symposium on Mobile Ad Hoc Networking and Computing, (MobiHoc) 2016*, Paderborn, Germany (**Best Paper Award**).
20. **A. Sinha**, G. Paschos, E. Modiano, “THROUGHPUT-OPTIMAL MULTI-HOP BROADCAST ALGORITHMS”, *Proceedings of the 17th ACM International Symposium on Mobile Ad Hoc Networking and Computing, (MobiHoc) 2016*, Paderborn, Germany.
21. **A. Sinha**, G. Paschos, C.P. Li, E. Modiano, “THROUGHPUT-OPTIMAL BROADCAST ON DIRECTED ACYCLIC GRAPHS”, *IEEE INFOCOM 2015*, Hong Kong, PRC.
22. **A. Sinha**, P. Mani, J. Liu, A. Flavel, D. Maltz, “DISTRIBUTED LOAD MANAGEMENT IN ANYCAST-BASED CDNS”, *53rd Annual Allerton Conference on Communication, Control, and Computing (Allerton) 2015*, Monticello, IL, USA.
23. A. Chattopadhyay, **A. Sinha**, M. Coupechoux, A. Kumar, “OPTIMAL CAPACITY RELAY NODE PLACEMENT IN A MULTI-HOP NETWORK ON A LINE”, *10th International Symposium on Modeling and Optimization in Mobile, Ad Hoc and Wireless Networks, WiOpt 2012*, Paderborn, Germany.

PATENTS

- “**Integrated Scheduler for Scheduling with X-Haul Capacity Constraints**”, M. Andrews, P. Ananth, **A. Sinha**, Invention submission # 81991 at Nokia Bell Labs. United States patent application US 15/630,367. 2018 Dec 27.
- “**Physical Uplink Control Channel Reliability Enhancements**”, A. Sinha et al., United States patent US 10,959,232. 2021 Mar 23.
- “**Uplink Control Channel Beam Switch Procedure**”, A. Sinha et al., United States patent US 11,109,380. 2021 Aug 31.

AWARDS AND HONORS

- Recipient of the **Google India Research Awards (2023)**, together with Prof. Rahul Vaze.
- Recipient of the **INSA Medal for Young Scientists (2021)**, awarded by the Indian National Science Academy, New Delhi, India
- Recipient of the **Best Paper Award in IEEE INFOCOM 2018**, Honolulu, HI, USA
- Recipient of the **Best Paper Award in Proceedings of the 17th ACM International Symposium on Mobile Ad Hoc Networking and Computing, ACM MobiHoc 2016**, Paderborn, Germany
- Recipient of the **Best Poster Award** in JTG/IEEE ITSoc Summer School 2022
- Recipient of Prof. Jnansaran Chatterjee Memorial **Gold Medal** and T.P. Saha Memorial **Gold Centered Silver Medal** from Jadavpur University, Kolkata in the year 2010
- Recipient of *Senior Jagadis Bose National Science Talent Search (JBNSTS)* scholarship, 2007 (awarded to approximately twenty students annually among all branches of science and engineering in the state of West Bengal, India)

MAJOR ACADEMIC ACHIEVEMENTS

- Secured **All India Rank 2** (out of approximately 1,00,000 students) in the *Graduate Aptitude Test in Engineering (GATE)* 2010, in Electronics and Communication Engineering.
- Ranked **2nd** in the department (ETCE) at **Jadavpur University**, Kolkata
- Secured **All India Rank 16** in *West Bengal Joint Entrance Examination (WBJEE 2006)* in the Engineering entrance test (out of approximately 80,000 students)

TEACHING

- **Fall 2022:** Probability (CSS.207.1)
- **Spring 2022:** Topics in Random Processes and Concentrations (EE6112)
- **Fall 2021:** Probability Foundations for Electrical Engineers (EE5110)
- **Spring 2021:** Topics in Random Processes and Concentrations (EE 6112)
- **Fall 2020:** Advanced Topics in Artificial Intelligence (EE 6180)
- **Spring 2020:** Topics in Random Processes and Concentrations (EE 6112)
- **Fall 2019:** Advanced Topics in Artificial Intelligence (EE 6180)
- **Spring 2019:** Topics in Random Processes and Concentrations (EE 6112)

STUDENT ADVISING & MENTORING

- **Post Doc**
 1. Samrat Mukhopadhyay* (currently an Assistant Professor at the dept. of Electronics Engg. at IIT (ISM) Dhanbad)
 2. Shahbaz Akhtar* (currently a faculty member at PCE Pune, India)
- **Ph.D.**
 1. Krishnakumar
- **M.S.**
 1. Debjit Paria* (Quantitative researcher at Millennium)
 2. Subhankar Banerjee*¹ (co-advised with Prof. K. Giridhar. Now a PhD student at UMD)
- **Undergraduate/ Dual-degree**
 1. Sourav Sahoo* (Quant. research scientist, J P Morgan Chase & Co.)
 2. Abhijeet Vyas* (currently a PhD student at Purdue University)
 3. Arunabh Srivastava* (currently a PhD student at the University of Maryland)
 4. Vishnu B* (Oracle)
 5. Bodagala Viswa Chaitanya* (Qualcomm)
- **Project Associate**
 1. Ativ Joshi
 2. Rajarshi Bhattacharjee* (currently a PhD student at U. Mass. Amherst)
 3. Avijit Mandal* (currently a PhD student at Duke University)

GRANTS

- Recipient of a US-India NSF-DST collaborative grant with **Prof. Mohammad Hajiesmaili** from **University of Massachusetts Amherst**, coordinated by IDEAS-Technology Innovation Hub (TIH) at the Indian Statistical Institute, Kolkata.
- Founder and Principal Investigator for the **IoE**-sponsored potential Center of Excellence (CoE) INTELLIGENT NETWORKS, IIT Madras
- Recipient of an unrestricted gift from Qualcomm (USA)

¹the symbol * indicates that the student has graduated

ACADEMIC VISITS

- **Yale Institute of Network Science**

Summer 2015

- Worked with Prof. Leandros Tassiulas on Throughput-Optimal Broadcasting in time-varying networks.

PROFESSIONAL/
VOLUNTARY
SERVICES

- Member of Project Review and Steering Group (PRSG) for a Ministry of Electronics & Information Technology sanctioned project carried out in SAMEER, Chennai
- TPC member of COMSNETS 2021, WIOPT 2020, SPCOM 2020, WIOPT 2021.
- **Served as an anonymous reviewer** for journals including IEEE/ACM TRANSACTIONS ON NETWORKING, IEEE TRANS. ON INFORMATION THEORY, IEEE TRANS. ON MOBILE COMPUTING, IEEE TRANS. ON WIRELESS COMMUNICATIONS, PERFORMANCE EVALUATION, IEEE TRANS. ON CONTROL OF NETWORK SYSTEMS.
- Served on the executive board of **Sangam** (the Indian student association at MIT) as the webmaster during the academic year 2015-2016.